

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings of claims in the application:

Listing of Claims:

1 **Claim 1.** (Previously Presented) A method for modifying the glycosylation pattern of a
2 glycopeptide comprising an acceptor moiety for a first fucosyltransferase, said method
3 comprising:

4 (a) contacting the glycopeptide with a reaction mixture that comprises a fucose donor
5 moiety and the first fucosyltransferase under appropriate conditions *in vitro* to
6 transfer fucose from the fucose donor moiety to the acceptor moiety, such that the
7 glycopeptide has a substantially uniform fucosylation pattern;

8 wherein said acceptor moiety comprises a member selected from Gal β 1,4GlcNAc-OR
9 and NeuAc α 2,3Gal β 1,4GlcNAc-OR, wherein R is an amino acid, a saccharide, an
10 oligosaccharide or an aglycon group having at least one carbon atom and is linked
11 to or is part of a glycopeptide;

12 wherein said first fucosyltransferase is eukaryotic, lacks a membrane anchoring domain,
13 and is a member selected from FucT-IV, FucT-V, FucT-VI, FucT-VII, and
14 combinations thereof.

1 **Claim 2.** (Previously Presented) The method according to claim 1, wherein the
2 glycopeptide comprises a second acceptor moiety for a second fucosyltransferase, and the
3 method further comprises:

4 (b) contacting the glycopeptide with a reaction mixture that comprises a fucose donor
5 moiety and the second fucosyltransferase under appropriate conditions *in vitro* to
6 transfer fucose from the fucose donor moiety to the acceptor moiety, such that the
7 glycopeptide has a substantially uniform fucosylation pattern.

1 **Claim 3.** (Previously presented) The method according to claim 2, wherein the
2 glycopeptide is contacted with the first fucosyltransferase and the second fucosyltransferase
3 simultaneously.

1 **Claim 4.** (Previously presented) The method according to claim 2, wherein the
2 glycopeptide is contacted with the first fucosyltransferase and the second fucosyltransferase
3 sequentially without isolation of product resulting from contacting with the first
4 fucosyltransferase.

1 **Claim 5.** (Cancelled)

1 **Claim 6.** (Previously presented) The method according to claim 2, wherein the second
2 fucosyltransferase is a member selected from FucT-IV, FucT-V, FucT-VI, FucT-VII and
3 combinations thereof.

1 **Claim 7.** (Cancelled)

1 **Claim 8.** (Previously presented) The method according to claim 1, wherein the
2 fucosyltransferase is recombinantly produced.

1 **Claim 9.** (Cancelled)

1 **Claim 10.** (Previously presented) The method according to claim 1, wherein at least about
2 80% of the acceptor moieties on the glycopeptide are fucosylated.

1 **Claim 11.** (Previously presented) The method according to claim 1, wherein the
2 glycopeptide is reversibly immobilized on a solid support.

1 **Claim 12.** (Previously presented) The method according to claim 11, wherein the solid
2 support is an affinity chromatography medium.

1 **Claim 13.** (Previously presented) The method according to claim 1, wherein the
2 glycopeptide is a full-length glycopeptide.

1 **Claim 14.** (Previously presented) The method according to claim 1, wherein the
2 glycopeptide is a fragment of a full length glycopeptide comprising an active site of the full-
3 length glycopeptide.

1 **Claim 15.** (Previously presented) The method according to claim 1, wherein the
2 glycopeptide is an IgG chimera.

1 **Claim 16.** (Previously presented) The method according to claim 1, wherein the
2 glycopeptide is a member selected from a hormone, a growth factor, an enzyme, an enzyme
3 inhibitor, a cytokine, a receptor, a ligand, and a monoclonal antibody.

1 **Claim 17.** (Previously presented) The method according to claim 1, wherein the
2 glycopeptide is on a cell.

1 **Claim 18.** (Cancelled)

1 **Claim 19.** (Previously presented) The method according to claim 1, wherein the fucose
2 donor moiety is GDP-fucose.

1 **Claim 20.** (Previously presented) The method according to claim 1, further comprising,
2 prior to step (a), contacting said glycopeptide with a glycosyltransferase other than a
3 fucosyltransferase and a donor moiety other than a fucose donor moiety, thereby glycosylating
4 the glycopeptide with a glycosyl moiety other than a fucose unit.

1 **Claim 21.** (Previously presented) The method according to claim 20, wherein the
2 glycosyltransferase is a member selected from the group consisting of galactosyltransferase,
3 sialyltransferase and combinations thereof.

1 **Claim 22.** (Withdrawn) A composition comprising a glycopeptide fucosylated according to
2 the method of claim 1.

1 **Claim 23.** (Withdrawn) The composition of claim 22, wherein at least 80% of the acceptor
2 moieties on the glycopeptide are fucosylated.

1 **Claim 24.** (Withdrawn) The composition of claim 22, wherein glycopeptide is attached to a
2 solid support.

1 **Claim 25.** (Withdrawn) The composition of claim 24, wherein the solid support is an
2 affinity chromatography medium.

1 **Claim 26.** (Withdrawn) The composition of claim 22, wherein the glycopeptide is a full-
2 length glycopeptide.

1 **Claim 27.** (Withdrawn) The composition of claim 22, wherein the glycopeptide comprises
2 $\text{Fuc}\alpha 1,2\text{Gal}\beta 1\text{-OR}$, $\text{Gal}\beta 1,3/4(\text{Fuc}\alpha 1,4/3)\text{GlcNAc-OR}$,
3 $\text{NeuAc}\alpha 2,3\text{Gal}\beta 1,3/4(\text{Fuc}\alpha 1,3/4)\text{GlcNAc-OR}$, $\text{Fuc}\alpha 1,2\text{Gal}\beta 1,3/4(\text{Fuc}\alpha 1,4/3)\text{GlcNAc}\beta\text{-OR}$
4 wherein R is an amino acid, a saccharide, an oligosaccharide or an aglycon group having at least
5 one carbon atom and is linked to or is part of a glycopeptide.

1 **Claim 28.** (Withdrawn) The composition of claim 22, wherein the glycopeptide comprises
2 $\text{NeuAc}\alpha 2,3\text{Gal}\beta 1,3/4(\text{Fuc}\alpha 1,3/4)\text{GlcNAc-OR}$, wherein R is an amino acid, a saccharide, an
3 oligosaccharide or an aglycon group having at least one carbon atom and is linked to or is part of
4 a glycopeptide.

1 **Claim 29.** (Withdrawn) The composition of claim 22, wherein the glycopeptide is a
2 hormone, a growth factor, an enzyme, an enzyme inhibitor, a cytokine, a receptor, a ligand, or a
3 monoclonal antibody.

1 **Claim 30.** (Withdrawn) The composition of claim 22, wherein the glycopeptide is on a cell.

1 **Claim 31.** (Previously Presented) A method of producing a recombinant glycopeptide
2 having a fucosylation pattern that is substantially identical to a fucosylated glycopeptide having a
3 known fucosylation pattern, said method comprising:

4 (a) contacting the recombinant glycopeptide with a reaction mixture that comprises a
5 fucose donor moiety and a first fucosyltransferase, under appropriate conditions
6 *in vitro* to transfer fucose from the fucose donor moiety to a fucose acceptor
7 moiety on said recombinant glycopeptide, thereby producing a fucosylated
8 recombinant glycopeptide

9 wherein said acceptor moiety comprises a member selected from Gal β 1,4GlcNAc-OR
10 and NeuAc α 2,3Gal β 1,4GlcNAc-OR, wherein R is an amino acid, a saccharide, an
11 oligosaccharide or an aglycon group having at least one carbon atom and is linked
12 to or is part of a glycopeptide;

13 wherein said first fucosyltransferase is eukaryotic, lacks a membrane anchoring domain,
14 and is a member selected from FucT-IV, FucT-V, FucT-VI, FucT-VII, and
15 combinations thereof; and

16 (b) terminating the transfer of the fucose to the fucose acceptor when the fucosylation
17 pattern substantially identical to the known fucosylation pattern is obtained.

1 **Claim 32.** (Previously presented) The method according to claim 31, further comprising:

2 (c) assaying the fucosylation pattern of the fucosylated recombinant glycopeptide,
3 thereby determining whether the fucosylation pattern is substantially identical to the
4 known fucosylation pattern.

1 **Claim 33.** (Previously presented) The method according to claim 31, wherein the
2 terminating is due to exhausting in the reaction mixture a member selected from the group
3 consisting of the fucosyltransferase, the fucose donor moiety, the fucose acceptor quench with a
4 chelator and combinations thereof.

1 **Claim 34.** (Previously Presented) The method according to claim **31**, wherein the
2 glycopeptide comprises a second acceptor moiety for a second fucosyltransferase, and the
3 method further comprises contacting the glycopeptide with a reaction mixture that comprises a
4 fucose donor moiety and the second fucosyltransferase under appropriate conditions *in vitro* to
5 transfer fucose from the fucose donor moiety to the second acceptor moiety.

1 **Claim 35.** (Previously presented) The method according to claim **34**, wherein the
2 glycopeptide is contacted with the first fucosyltransferase and the second fucosyltransferase
3 simultaneously.

1 **Claim 36.** (Previously presented) The method according to claim **34**, wherein the
2 glycopeptide is contacted with the first fucosyltransferase and the second fucosyltransferase
3 sequentially without isolation of product resulting from contacting with the first
4 fucosyltransferase.

1 **Claim 37.** (Cancelled)

1 **Claim 38.** (Previously presented) The method according to claim **34**, wherein the second
2 fucosyltransferase is eukaryotic and a member selected from FucT-IV, FucT-V, FucT-VI,
3 FucT-VII and combinations thereof.

1 **Claim 39.** (Cancelled)

1 **Claim 40.** (Previously presented) The method according to claim **31**, wherein the
2 fucosyltransferase is recombinantly produced.

1 **Claim 41.** (Cancelled)

1 **Claim 42.** (Previously presented) The method according to claim **31**, wherein at least about
2 80% of the acceptor moieties on the glycopeptide are fucosylated.

- 1 **Claim 43.** (Previously presented) The method according to claim **31**, wherein the
2 glycopeptide is reversibly immobilized on a solid support.
- 1 **Claim 44.** (Previously presented) The method according to claim **31**, wherein the solid
2 support is an affinity chromatography medium.
- 1 **Claim 45.** (Previously presented) The method according to claim **31**, wherein the
2 glycopeptide is a full-length glycopeptide.
- 1 **Claim 46.** (Previously presented) The method according to claim **31**, wherein the
2 glycopeptide is a fragment of a full length glycopeptide comprising an active site of the full-
3 length glycopeptide.
- 1 **Claim 47.** (Previously presented) The method according to claim **31**, wherein the
2 glycopeptide is an IgG chimera.
- 1 **Claim 48.** (Previously presented) The method according to claim **31**, wherein the
2 glycopeptide is a member selected from a hormone, a growth factor, an enzyme, an enzyme
3 inhibitor, a cytokine, a receptor, a ligand, and a monoclonal antibody.
- 1 **Claim 49.** (Previously presented) The method according to claim **31** wherein the
2 glycopeptide is on a cell.
- 1 **Claim 50.** (Cancelled)
- 1 **Claim 51.** (Previously presented) The method according to claim **31**, wherein the fucose
2 donor moiety is GDP-fucose.
- 1 **Claim 52.** (Previously Presented) The method according to claim **31**, further comprising,
2 prior to step (a), contacting said glycopeptide with a glycosyltransferase other than a
3 fucosyltransferase and a donor moiety other than a fucose donor moiety *in vitro*, thereby
4 glycosylating the glycopeptide with a glycosyl moiety other than a fucose unit.

1 **Claim 53.** (Previously presented) The method according to claim 52, wherein the
2 glycosyltransferase is a member selected from the group consisting of galactosyltransferase,
3 sialyltransferase and combinations thereof.

1 **Claim 54.** (Previously Presented) A large-scale method for modifying the glycosylation
2 pattern of a glycopeptide comprising an acceptor moiety for a first fucosyltransferase, said
3 method comprising:

4 contacting at least about 500 mg of glycopeptide with a reaction mixture that comprises a
5 fucose donor moiety and the first fucosyltransferase under appropriate conditions
6 *in vitro* to transfer fucose from the fucose donor moiety to the acceptor moiety,
7 such that the glycopeptide has a substantially uniform fucosylation pattern.

1 **Claim 55.** (Previously Presented) A large-scale method of producing a recombinant
2 glycopeptide having a fucosylation pattern that is substantially identical to a fucosylated
3 glycopeptide having a known fucosylation pattern, said method comprising:

4 (a) contacting at least about 500 mg of the recombinant glycopeptide with a reaction
5 mixture that comprises a fucose donor moiety and the fucosyltransferase under
6 appropriate conditions *in vitro* to transfer fucose from the fucose donor moiety to
7 a fucose acceptor moiety on said recombinant glycopeptide, thereby producing a
8 fucosylated recombinant glycopeptide; and

9 (b) terminating the transfer of the fucose to the fucose acceptor when the fucosylation
10 pattern substantially identical to the known fucosylation pattern is obtained.

1 **Claim 56.** (Cancelled)

1 **Claim 57.** (Cancelled)

1 **Claim 58.** (Cancelled)

1 **Claim 59.** (Cancelled)

1 **Claim 60.** (Cancelled)

1 **Claim 61.** (Cancelled)

1 **Claim 62.** (Cancelled)

1 **Claim 63.** (Cancelled)

1 **Claim 64.** (Cancelled)

1 **Claim 65.** (Cancelled)

1 **Claim 66.** (Previously Presented) A method for modifying the glycosylation pattern of a
2 glycopeptide comprising an acceptor moiety for a first fucosyltransferase, wherein said first
3 fucosyltransferase is eukaryotic and lacks a membrane anchoring domain, said method
4 comprising:

5 (a) contacting the glycopeptide with a reaction mixture that comprises a fucose donor
6 moiety and the first fucosyltransferase under appropriate conditions *in vitro* to
7 transfer fucose from the fucose donor moiety to the acceptor moiety, such that the
8 glycopeptide has a substantially uniform fucosylation pattern;

9 wherein the glycopeptide comprises a second acceptor moiety for a second
10 fucosyltransferase, and

11 (b) contacting the glycopeptide with a reaction mixture that comprises a fucose donor
12 moiety and the second fucosyltransferase under appropriate conditions *in vitro* to
13 transfer fucose from the fucose donor moiety to the acceptor moiety, such that the
14 glycopeptide has a substantially uniform fucosylation pattern.

1 **Claim 67.** (Previously Presented) A method for modifying the glycosylation pattern of a
2 glycopeptide comprising an acceptor moiety for a first fucosyltransferase, wherein said first

3 fucosyltransferase is eukaryotic and lacks a membrane anchoring domain, said method
4 comprising:

5 (a) contacting the glycopeptide with a reaction mixture that comprises a fucose donor
6 moiety and the first fucosyltransferase under appropriate conditions *in vitro* to
7 transfer fucose from the fucose donor moiety to the acceptor moiety, such that the
8 glycopeptide has a substantially uniform fucosylation pattern;

9 wherein the glycopeptide comprises a second acceptor moiety for a second
10 fucosyltransferase; and

11 (b) contacting the glycopeptide with a reaction mixture that comprises a fucose donor
12 moiety and the second fucosyltransferase under appropriate conditions to transfer
13 fucose from the fucose donor moiety to the acceptor moiety, such that the
14 glycopeptide has a substantially uniform fucosylation pattern;

15 wherein the glycopeptide is contacted with the first fucosyltransferase and the second
16 fucosyltransferase simultaneously.

1 **Claim 68.** (Previously Presented) A method for modifying the glycosylation pattern of a
2 glycopeptide comprising an acceptor moiety for a first fucosyltransferase, wherein said first
3 fucosyltransferase is eukaryotic and lacks a membrane anchoring domain, said method
4 comprising:

5 (a) contacting the glycopeptide with a reaction mixture that comprises a fucose donor
6 moiety and the first fucosyltransferase under appropriate conditions *in vitro* to
7 transfer fucose from the fucose donor moiety to the acceptor moiety, such that the
8 glycopeptide has a substantially uniform fucosylation pattern;

9 wherein the glycopeptide comprises a second acceptor moiety for a second
10 fucosyltransferase, and

11 (b) contacting the glycopeptide with a reaction mixture that comprises a fucose donor
12 moiety and the second fucosyltransferase under appropriate conditions to transfer
13 fucose from the fucose donor moiety to the acceptor moiety, such that the
14 glycopeptide has a substantially uniform fucosylation pattern; and

wherein the second fucosyltransferase is a member selected from FucT-IV, FucT-V, FucT-VI, FucT-VII and combinations thereof.

Claim 69. (Cancelled)

Claim 70. (Previously Presented) A method for modifying the glycosylation pattern of a glycopeptide comprising an acceptor moiety for a first fucosyltransferase, wherein said first fucosyltransferase is eukaryotic and lacks a membrane anchoring domain, said method comprising:

(a) contacting the glycopeptide with a reaction mixture that comprises a fucose donor moiety and the first fucosyltransferase under appropriate conditions *in vitro* to transfer fucose from the fucose donor moiety to the acceptor moiety, such that the glycopeptide has a substantially uniform fucosylation pattern;
wherein the glycopeptide is a fragment of a full length glycopeptide comprising an active site of the full-length glycopeptide.

Claim 71. (Previously Presented) A method for modifying the glycosylation pattern of a glycopeptide comprising an acceptor moiety for a first fucosyltransferase, wherein said first fucosyltransferase is eukaryotic and lacks a membrane anchoring domain, said method comprising:

(a) contacting the glycopeptide with a reaction mixture that comprises a fucose donor moiety and the first fucosyltransferase under appropriate conditions *in vitro* to transfer fucose from the fucose donor moiety to the acceptor moiety, such that the glycopeptide has a substantially uniform fucosylation pattern;
wherein the glycopeptide is an IgG chimera.

Claim 72. (Previously Presented) A method for modifying the glycosylation pattern of a glycopeptide comprising an acceptor moiety for a first fucosyltransferase, wherein said first fucosyltransferase is eukaryotic and lacks a membrane anchoring domain, said method comprising:

5 (a) contacting the glycopeptide with a reaction mixture that comprises a fucose donor
6 moiety and the first fucosyltransferase under appropriate conditions *in vitro* to
7 transfer fucose from the fucose donor moiety to the acceptor moiety, such that the
8 glycopeptide has a substantially uniform fucosylation pattern;
9 wherein the glycopeptide is a hormone, a growth factor, an enzyme, an enzyme inhibitor,
10 a cytokine, and a receptor.

1 **Claim 73.** (Previously Presented) A method for modifying the glycosylation pattern of a
2 glycopeptide comprising an acceptor moiety for a first fucosyltransferase, wherein said first
3 fucosyltransferase is eukaryotic and lacks a membrane anchoring domain, said method
4 comprising:

5 (a) contacting the glycopeptide with a reaction mixture that comprises a fucose donor
6 moiety and the first fucosyltransferase under appropriate conditions *in vitro* to
7 transfer fucose from the fucose donor moiety to the acceptor moiety, such that the
8 glycopeptide has a substantially uniform fucosylation pattern;
9 wherein the glycopeptide is on a cell.

1 **Claim 74.** (Previously Presented) A method for modifying the glycosylation pattern of a
2 glycopeptide comprising an acceptor moiety for a first fucosyltransferase, wherein said first
3 fucosyltransferase is eukaryotic and lacks a membrane anchoring domain, said method
4 comprising:

5 contacting said glycopeptide with a glycosyltransferase selected from the group
6 consisting of galactosyltransferase, sialyltransferase and combinations thereof,
7 and a donor moiety other than a fucose donor moiety *in vitro*, thereby
8 glycosylating the glycopeptide with a glycosyl moiety other than a fucose unit;
9 and

10 (a) contacting the glycopeptide with a reaction mixture that comprises a fucose donor
11 moiety and the first fucosyltransferase under appropriate conditions *in vitro* to

transfer fucose from the fucose donor moiety to the acceptor moiety, such that the glycopeptide has a substantially uniform fucosylation pattern.

Claim 75. (Previously Presented) A method of producing a recombinant glycopeptide having a fucosylation pattern that is substantially identical to a fucosylated glycopeptide having a known fucosylation pattern, said method comprising:

(a) contacting the recombinant glycopeptide with a reaction mixture that comprises a fucose donor moiety and a first fucosyltransferase, under appropriate conditions *in vitro* to transfer fucose from the fucose donor moiety to a fucose acceptor moiety on said recombinant glycopeptide, thereby producing a fucosylated recombinant glycopeptide, wherein said first fucosyltransferase is eukaryotic, lacks a membrane anchoring domain, and is a member selected from FucT-IV, FucT-V, FucT-VI, FucT-VII, and combinations thereof; and

wherein the glycopeptide comprises a second acceptor moiety for a second fucosyltransferase;

(b) contacting the glycopeptide with a reaction mixture that comprises a fucose donor moiety and the second fucosyltransferase under appropriate conditions to transfer fucose from the fucose donor moiety to the second acceptor moiety; and

(c) terminating the transfer of the fucose to the fucose acceptor when the fucosylation pattern substantially identical to the known fucosylation pattern is obtained.

Claim 76. (Previously Presented) A method of producing a recombinant glycopeptide having a fucosylation pattern that is substantially identical to a fucosylated glycopeptide having a known fucosylation pattern, said method comprising:

(a) contacting the recombinant glycopeptide with a reaction mixture that comprises a fucose donor moiety and a first fucosyltransferase, under appropriate conditions *in vitro* to transfer fucose from the fucose donor moiety to a fucose acceptor moiety on said recombinant glycopeptide, thereby producing a fucosylated recombinant glycopeptide, wherein said first fucosyltransferase is eukaryotic,

9 lacks a membrane anchoring domain, and is a member selected from FucT-IV,
10 FucT-V, FucT-VI, FucT-VII, and combinations thereof; and
11 wherein the glycopeptide comprises a second acceptor moiety for a second
12 fucosyltransferase;
13 (b) contacting the glycopeptide with a reaction mixture that comprises a fucose donor
14 moiety and the second fucosyltransferase under appropriate conditions to transfer
15 fucose from the fucose donor moiety to the acceptor moiety, such that the
16 glycopeptide has a substantially uniform fucosylation pattern;
17 wherein the glycopeptide is contacted with the first fucosyltransferase and the second
18 fucosyltransferase simultaneously; and
19 (c) terminating the transfer of the fucose to the fucose acceptor when the fucosylation
20 pattern substantially identical to the known fucosylation pattern is obtained.

1 **Claim 77.** (Previously Presented) A method of producing a recombinant glycopeptide
2 having a fucosylation pattern that is substantially identical to a fucosylated glycopeptide having a
3 known fucosylation pattern, said method comprising:

4 (a) contacting the recombinant glycopeptide with a reaction mixture that comprises a
5 fucose donor moiety and a first fucosyltransferase, under appropriate conditions
6 *in vitro* to transfer fucose from the fucose donor moiety to a fucose acceptor
7 moiety on said recombinant glycopeptide, thereby producing a fucosylated
8 recombinant glycopeptide, wherein said first fucosyltransferase is eukaryotic,
9 lacks a membrane anchoring domain, and is a member selected from FucT-IV,
10 FucT-V, FucT-VI, FucT-VII, and combinations thereof; and
11 wherein the glycopeptide comprises a second acceptor moiety for a second
12 fucosyltransferase;
13 (b) contacting the glycopeptide with a reaction mixture that comprises a fucose donor
14 moiety and the second fucosyltransferase under appropriate conditions *in vitro* to
15 transfer fucose from the fucose donor moiety to the acceptor moiety, such that the
16 glycopeptide has a substantially uniform fucosylation pattern; and

17 wherein the second fucosyltransferase is a member selected from FucT-IV, FucT-V,
18 FucT-VI, FucT-VII, and combinations thereof; and
19 (c) terminating the transfer of the fucose to the fucose acceptor when the fucosylation
20 pattern substantially identical to the known fucosylation pattern is obtained.

1 **Claim 78.** (Cancelled)

1 **Claim 79.** (Previously Presented) A method of producing a recombinant glycopeptide
2 having a fucosylation pattern that is substantially identical to a fucosylated glycopeptide having a
3 known fucosylation pattern, said method comprising:

4 (a) contacting the recombinant glycopeptide with a reaction mixture that comprises a
5 fucose donor moiety and a first fucosyltransferase, under appropriate conditions
6 *in vitro* to transfer fucose from the fucose donor moiety to a fucose acceptor
7 moiety on said recombinant glycopeptide, thereby producing a fucosylated
8 recombinant glycopeptide, wherein said first fucosyltransferase is eukaryotic,
9 lacks a membrane anchoring domain, and is a member selected from FucT-IV,
10 FucT-V, FucT-VI, FucT-VII, and combinations thereof; and

11 wherein the glycopeptide is a fragment of a full length glycopeptide comprising an active
12 site of the full-length glycopeptide; and

13 (b) terminating the transfer of the fucose to the fucose acceptor when the fucosylation
14 pattern substantially identical to the known fucosylation pattern is obtained.

1 **Claim 80.** (Previously Presented) A method of producing a recombinant glycopeptide
2 having a fucosylation pattern that is substantially identical to a fucosylated glycopeptide having a
3 known fucosylation pattern, said method comprising:

4 (a) contacting the recombinant glycopeptide with a reaction mixture that comprises a
5 fucose donor moiety and a first fucosyltransferase, under appropriate conditions
6 *in vitro* to transfer fucose from the fucose donor moiety to a fucose acceptor
7 moiety on said recombinant glycopeptide, thereby producing a fucosylated
8 recombinant glycopeptide, wherein said first fucosyltransferase is eukaryotic,

9 lacks a membrane anchoring domain, and is a member selected from FucT-IV,
10 FucT-V, FucT-VI, FucT-VII, and combinations thereof; and
11 wherein the glycopeptide is an IgG chimera; and
12 (b) terminating the transfer of the fucose to the fucose acceptor when the fucosylation
13 pattern substantially identical to the known fucosylation pattern is obtained.

1 **Claim 81.** (Previously Presented) A method of producing a recombinant glycopeptide
2 having a fucosylation pattern that is substantially identical to a fucosylated glycopeptide having a
3 known fucosylation pattern, said method comprising:

4 (a) contacting the recombinant glycopeptide with a reaction mixture that comprises a
5 fucose donor moiety and a first fucosyltransferase, under appropriate conditions
6 *in vitro* to transfer fucose from the fucose donor moiety to a fucose acceptor
7 moiety on said recombinant glycopeptide, thereby producing a fucosylated
8 recombinant glycopeptide, wherein said first fucosyltransferase is eukaryotic,
9 lacks a membrane anchoring domain, and is a member selected from FucT-IV,
10 FucT-V, FucT-VI, FucT-VII, and combinations thereof; and
11 wherein the glycopeptide is a hormone, a growth factor, an enzyme, an enzyme inhibitor,
12 a cytokine, and a receptor; and
13 (b) terminating the transfer of the fucose to the fucose acceptor when the fucosylation
14 pattern substantially identical to the known fucosylation pattern is obtained.

1 **Claim 82.** (Previously Presented) A method of producing a recombinant glycopeptide
2 having a fucosylation pattern that is substantially identical to a fucosylated glycopeptide having a
3 known fucosylation pattern, said method comprising:

4 (a) contacting said glycopeptide with a glycosyltransferase other than a fucosyltransferase
5 and a donor moiety other than a fucose donor moiety, thereby glycosylating the
6 glycopeptide with a glycosyl moiety other than a fucose unit, wherein the
7 glycosyltransferase is a member selected from the group consisting of
8 galactosyltransferase, sialyltransferase and combinations thereof

- 9 (b) contacting the recombinant glycopeptide with a reaction mixture that comprises a
10 fucose donor moiety and a first fucosyltransferase, under appropriate conditions
11 *in vitro* to transfer fucose from the fucose donor moiety to a fucose acceptor
12 moiety on said recombinant glycopeptide, thereby producing a fucosylated
13 recombinant glycopeptide, wherein said first fucosyltransferase is eukaryotic,
14 lacks a membrane anchoring domain, and is a member selected from FucT-IV,
15 FucT-V, FucT-VI, FucT-VII, and combinations thereof; and
16 (c) terminating the transfer of the fucose to the fucose acceptor when the fucosylation
17 pattern substantially identical to the known fucosylation pattern is obtained.

1 **Claim 83.** (Previously Presented) A method for modifying the glycosylation pattern of a
2 glycopeptide comprising an acceptor moiety for a first fucosyltransferase, wherein said first
3 fucosyltransferase is eukaryotic, lacks a membrane anchoring domain, and is FucT-VI, said
4 method comprising:

- 5 (a) contacting the glycopeptide with a reaction mixture that comprises a fucose donor
6 moiety and the first fucosyltransferase under appropriate conditions *in vitro* to
7 transfer fucose from the fucose donor moiety to the acceptor moiety, such that the
8 glycopeptide has a substantially uniform fucosylation pattern.

1 **Claim 84.** (Previously Presented) A method for modifying the glycosylation pattern of a
2 glycopeptide comprising an acceptor moiety for a first fucosyltransferase, wherein said first
3 fucosyltransferase is eukaryotic, lacks a membrane anchoring domain, and is FucT-VII, said
4 method comprising:

- 5 (a) contacting the glycopeptide with a reaction mixture that comprises a fucose donor
6 moiety and the first fucosyltransferase under appropriate conditions *in vitro* to
7 transfer fucose from the fucose donor moiety to the acceptor moiety, such that the
8 glycopeptide has a substantially uniform fucosylation pattern.

1 **Claim 85.** (Previously Presented) A method of producing a recombinant glycopeptide
2 having a fucosylation pattern that is substantially identical to a fucosylated glycopeptide having a
3 known fucosylation pattern, said method comprising:

4 (a) contacting the recombinant glycopeptide with a reaction mixture that comprises a
5 fucose donor moiety and a first fucosyltransferase, under appropriate conditions
6 *in vitro* to transfer fucose from the fucose donor moiety to a fucose acceptor
7 moiety on said recombinant glycopeptide, thereby producing a fucosylated
8 recombinant glycopeptide;

9 wherein said first fucosyltransferase is eukaryotic, lacks a membrane anchoring domain,
10 and is FucT-VI; and

11 (b) terminating the transfer of the fucose to the fucose acceptor when the fucosylation
12 pattern substantially identical to the known fucosylation pattern is obtained.

1 **Claim 86.** (Previously Presented) A method of producing a recombinant glycopeptide
2 having a fucosylation pattern that is substantially identical to a fucosylated glycopeptide having a
3 known fucosylation pattern, said method comprising:

4 (a) contacting the recombinant glycopeptide with a reaction mixture that comprises a
5 fucose donor moiety and a first fucosyltransferase, under appropriate conditions
6 *in vitro* to transfer fucose from the fucose donor moiety to a fucose acceptor
7 moiety on said recombinant glycopeptide, thereby producing a fucosylated
8 recombinant glycopeptide;

9 wherein said first fucosyltransferase is eukaryotic, lacks a membrane anchoring domain,
10 and is FucT-VII; and

11 (b) terminating the transfer of the fucose to the fucose acceptor when the fucosylation
12 pattern substantially identical to the known fucosylation pattern is obtained.

1 **Claim 87.** (Previously Presented) The large scale, *in vitro* method according to claim 54,
2 wherein the glycopeptide comprises a second acceptor moiety for a second
3 fucosyltransferase, and the method further comprises

4 (b) contacting the glycopeptide with a reaction mixture that comprises a fucose
5 donor moiety and the second fucosyltransferase under appropriate conditions
6 *in vitro* to transfer fucose from the fucose donor moiety to the acceptor
7 moiety, such that the glycopeptide has a substantially uniform fucosylation
8 pattern.

1 **Claim 88.** (Previously Presented) The large scale, *in vitro* method according to claim 87,
2 wherein the glycopeptide is contacted with the first fucosyltransferase and the second
3 fucosyltransferase simultaneously.

1 **Claim 89.** (Previously Presented) The large scale, *in vitro* method according to claim 87,
2 wherein the glycopeptide is contacted with the first fucosyltransferase and the second
3 fucosyltransferase sequentially without isolation of product resulting from contacting with the
4 first fucosyltransferase.

1 **Claim 90.** (Previously Presented) The large scale, *in vitro* method according to claim 54,
2 wherein the first fucosyltransferase is a member selected from FucT-IV, FucT-VI, FucT-VII and
3 combinations thereof.

1 **Claim 91.** (Previously Presented) The large scale, *in vitro* method according to claim 87,
2 wherein the second fucosyltransferase is a member selected from FucT-IV, FucT-V, FucT-VI,
3 FucT-VII and combinations thereof.

1 **Claim 92.** (Previously Presented) The large scale, *in vitro* method according to claim 54,
2 wherein the fucosyltransferase is bacterial.

1 **Claim 93.** (Previously Presented) The large scale, *in vitro* method according to claim 54,
2 wherein the fucosyltransferase is recombinantly produced.

1 **Claim 94.** (Previously Presented) The large scale, *in vitro* method according to claim 54,
2 wherein the fucosyltransferase lacks a membrane anchoring domain.

1 **Claim 95.** (Previously Presented) The large scale, *in vitro* method according to claim 54,
2 wherein at least about 80% of the acceptor moieties on the glycopeptide are fucosylated.

1 **Claim 96.** (Previously Presented) The large scale, *in vitro* method according to claim 54,
2 wherein glycopeptide is reversibly immobilized on a solid support.

1 **Claim 97.** (Previously Presented) The large scale, *in vitro* method according to claim 96,
2 wherein the solid support is an affinity chromatography medium.

1 **Claim 98.** (Previously Presented) The large scale, *in vitro* method according to claim 54,
2 wherein the glycopeptide is a full-length glycopeptide.

1 **Claim 99.** (Previously Presented) The large scale, *in vitro* method according to claim 54,
2 wherein the glycopeptide is a fragment of a full length glycopeptide comprising an active site of
3 the full-length glycopeptide.

1 **Claim 100.** (Previously Presented) The large scale, *in vitro* method according to claim 54,
2 wherein the glycopeptide is an IgG chimera.

1 **Claim 101.** (Previously Presented) The large scale, *in vitro* method according to claim 54,
2 wherein the glycopeptide is a hormone, a growth factor, an enzyme, an enzyme inhibitor, a
3 cytokine, a receptor, a ligand, or a monoclonal antibody.

1 **Claim 102.** (Previously Presented) The large scale, *in vitro* method according to claim 54,
2 wherein the glycopeptide is on a cell.

1 **Claim 103.** (Previously Presented) The large scale, *in vitro* method according to claim 54,
2 wherein the acceptor moiety comprises Gal β 1-OR, Gal β 1,3/4GlcNAc-OR,
3 NeuAc α 2,3Gal β 1,3/4GlcNAc-OR, wherein R is an amino acid, a saccharide, an oligosaccharide
4 or an aglycon group having at least one carbon atom and is linked to or is part of a glycopeptide.

1 **Claim 104.** (Previously Presented) The large scale, *in vitro* method according to claim 54,
2 wherein the fucose donor moiety is GDP-fucose.

1 **Claim 105.** (Previously Presented) The large scale, *in vitro* method according to claim 54,
2 further comprising, prior to step (a), contacting said glycopeptide with a glycosyltransferase
3 other than a fucosyltransferase and a donor moiety other than a fucose donor moiety, thereby
4 glycosylating the glycopeptide with a glycosyl moiety other than a fucose unit.

1 **Claim 106.** (Previously Presented) The large scale, *in vitro* method according to claim 105,
2 wherein the glycosyltransferase is a member selected from the group consisting of
3 galactosyltransferase, sialyltransferase and combinations thereof.